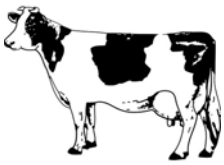
New Coliform Standard for Milk Sold Raw to Consumers



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With the passing of (AB 1735) (Assembly Ag Committee), several milk product standards were updated to bring California requirements into greater conformity with national standards, as well as those of neighboring states. The changes take effect on January 1, 2008, and include the addition of maximum limits on the amount of coliform bacteria allowed in fluid milk sold raw to the consumer. The purpose of this fact sheet is to provide brief answers to questions regarding coliform bacteria in general, and what this new standard means with regard to the quality, safety and availability of raw milk within California.

What are coliforms?

Coliforms are a group of bacteria commonly found in the environment, including soil, surface water, vegetation and the intestinal tracts of warm-blooded animals. Detection of coliforms is used as a general indicator of sanitary conditions in dairy production and processing environments. Most coliforms do not cause disease, but a small percentage can cause illness in people, especially young children, the elderly, and those with weakened immune systems. One example of these toxin-producing bacteria, known as E. *coli* O157:H7, can cause serious food-borne illness, especially in children, including abdominal cramps, bloody diarrhea and acute kidney failure in severe cases.

How do coliforms get into milk?

Coliform bacteria are normally shed in the feces of healthy livestock, including dairy cattle. Thus, poor herd hygiene, contaminated water, unsanitary milking practices, and improperly washed and maintained equipment can all lead to elevated coliform counts in raw milk at the dairy farm. Even though cows with coliform mastistis (an inflammation of the udder) can in some instances influence coliform counts, the milking of cows with wet and manure-soiled udders and inadequately cleaned milking equipment, are the most common ways for coliform bacteria to enter milk on-farm.

Coliforms in milk: What does it mean?

Most coliforms originate from the intestines of warm-blooded animals, including people. Since most coliform bacteria are not harmful, the finding of coliforms in milk does not necessarily mean that a disease causing, or pathogenic, form of the bacteria is present. However, elevated coliform counts in milk and dairy products suggest unsanitary conditions exist during production, processing or packaging. In the dairy farm setting, a coliform count is a useful indicator of the extent of fecal bacteria in the milk, and is a recognized index of the level of sanitation at a facility. The use of coliform counts as an indicator of sanitation has been a common tool in public health protection for many years. For example, the presence of coliforms is used as one signal that environmental contamination of drinking water supply systems has occurred. In dairy products, the process of pasteurization easily kills coliform bacteria. Therefore, the finding of coliforms in pasteurized products indicates some level of contamination has occurred after pasteurization during product manufacturing or packaging. For milk sold raw, where no intervening pasteurization step is utilized, coliform counts reflect sanitation practices throughout milk handling, from the cow to final bottling. In addition to food safety and public health concerns, coliforms, along with other bacteria, may produce off flavors in milk and reduce shelf life of dairy products.

Since most food-borne pathogens originate from fecal contamination, including *E.Coli*, *Salmonella* and *Campylobacter*, it is essential that strict sanitary practices be followed to minimize the risk to people consuming raw milk products.

What level of coliforms is allowed in raw milk?

The new standard sets a maximum amount of coliform bacteria at no more than 10 bacteria per milliliter (mL) in milk sold raw to the consumer, the same limit required for pasteurized milk. This level is consistent with both national and international public health and food safety requirements as reflected in standards set for pasteurized dairy products by the U.S. Food and Drug Administration, the United States Department of Agriculture (USDA), the Canadian Food Inspection Service, and the European Economic Community (EEC). It is also the same standard currently used for raw milk sold for direct consumption in several western states, including Nevada, Arizona, Utah, Idaho, and Washington.

Is this coliform standard achievable in milk that is not pasteurized?

Yes. Coliform counts of $\leq$ 10 bacteria per milliliter (mL) can be routinely achieved in raw farm milk, with utilization of sound cleaning and sanitation practices. On average, about 25% of regulatory bulk milk samples collected during the year from dairy farms inspected by the Department have coliform counts at or below this level, even though virtually all of this milk is ultimately pasteurized at a milk products plant. This agrees with national data collected by USDA's National Animal Health Monitoring System, and published in the Journal of Dairy Science in 2004 (*J. Dairy Sci. 87:2822*). This study gathered data from 21 states (including California) and represented 81% of dairy herds across the country. Although coliforms were detected in 95% of samples, approximately 20% were between 0 and 10 colony-forming units per mL.

Will this standard reduce the availability of packaged raw milk in California?

Consistent use of proper milking procedures, and effective cleaning and sanitation practices will allow for the continued production of raw milk that meets minimum bacterial standards. The California Food and Agricultural Code calls for the restriction of products that fail to meet bacterial standards in three of the last five regulatory samples. The Department collects these samples approximately once per month. Producers are informed when elevated bacterial counts are found, and official notices are written when specific products violate standards in two of the last four samples. These procedures provide ample warning to producers, and allow for cleaning, sanitation or equipment problems to be addressed before restriction of a product takes place. The Department's Dairy Foods Specialists routinely assist facilities with identifying and correcting problem areas. As always, prevention of problems through regular adherence to sound milk handling and sanitation practices is the best way to avoid violation of bacterial standards. Some common and effective practices to control coliform counts in raw milk include:

- Properly managing manure, bedding, housing and pastures to prevent cows from arriving overly dirty at the milking parlor.
- Washing the udders and teats of cows, and ensuring they are clean and dry prior to milking.
- Ensuring the hands of milkers are clean and dry
- Use of an appropriate commercially available pre-milking teat sanitizer to further reduce the amount of bacteria contacting milking equipment.
- Milking any cows with infected udders last, and ensuring such milk is properly excluded from milk intended for consumption.
- Ensuring all equipment throughout the entire milking system is properly cleaned and sanitized after each milking.
- Ensuring detergents and sanitizers are used at effective concentrations, and that adequate amounts and temperatures of hot water are utilized.
- Establishing and adhering to a maintenance schedule for milking equipment to ensure proper operation and to replace worn out inflations, hoses, gaskets and other parts that can harbor coliform bacteria.
- Providing sufficient refrigeration to ensure milk is properly cooled and stored at 45 degrees or below.
- Ensuring the milk products plant where the raw milk is handled and finally packaged for the consumer is also properly constructed, clean and sanitary. Bottles of raw market milk must be mechanically capped to avoid contamination from workers' hands.

All of these procedures are well-recognized and proven means to help control the bacterial quality of milk, including coliforms. Without the added protective step of pasteurization, cleanliness and sanitation are of increased importance to producing raw milk of safe and suitable quality for the consumer.

For additional information, you may contact the Milk and Dairy Food Safety Branch at (916) 654-0773.